Dineth Perera

Electrical & Electronic Engineering Undergraduate | Remote-Sensing Computer Vision | Signal Processing | Embedded AI

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PROFESSIONAL SUMMARY

Third-year B.Sc. Engineering undergraduate in Electrical and Electronic Engineering at the University of Peradeniya (GPA: 3.70/4.00), with research interests in remote-sensing computer vision,. Seeking research internships in computer vision, remote sensing, signal processing, generative AI, and medical imaging.

EDUCATION

B.Sc. Engineering (Hons) in Electrical and Electronic Engineering, University of Peradeniya **2023–Present**

- Current GPA: 3.70/4.00.

G.C.E. Advanced Level – Physical Science Stream **2021**

- National Rank: 68 | District Rank: 4 | Z-score: 2.62.

PUBLICATIONS

A Controlled Benchmark of Visual State-Space Backbones with Domain-Shift and Boundary Analysis for Remote-Sensing Segmentation **IGARSS 2026**

Nichula Wasalathilaka, **Dineth Perera**, Oshadha Samarakoon, Buddhi Wijenayake, Roshan Godaliyadda, Vijitha Herath, Parakrama Ekanayake. Accepted, IEEE International Geoscience and Remote Sensing Symposium (IGARSS), 2026. arXiv:2604.18721.

- Contribution: experiments, benchmarking, analysis, and manuscript preparation; compared representative visual state-space models with controlled CNN/Transformer baselines under a fixed lightweight decoder.

MambaRefine-CD: Remote-Sensing Binary Change Detection with Visual State-Space Encoders **MERCON 2026**

Dineth Perera, Thaariq Firdous, Oshadha Samarakoon, Roshan Godaliyadda, Parakrama Ekanayake, Vijitha Herath. Under Review.

- Contribution: Model development,Impplementation and Experiments.Using MambaVision for Chnage detection and boundary refinemnt using D-RBI.Train and validation on DSIFN-CD and WHU-CD datasets.

ONGOING RESEARCH WORK

WildFire-S2: Bi-temporal Wildfire Change Detection Dataset Preparation **Ongoing**

- Preparing a Sentinel-2 wildfire/burned-area change detection dataset with pre-fire and post-fire imagery, RGB/MSI organization, and binary change masks.
- Work includes checking image/mask counts, documenting metadata, verifying patch size and band availability, and preparing dataset statistics for later model training.

DiTWA: Tri-temporal Disaster Change Detection Dataset and Baseline Pipeline **Ongoing**

- Organizing before, during, and after disaster imagery for tri-temporal change detection experiments, with annotations planned for before-to-during and before-to-after settings.
- Setting up a maintainable data structure and initial training/evaluation pipeline for future comparison of bi-temporal and tri-temporal change detection models.

Mamba-Based Change Detection for Remote Sensing **Ongoing**

- Ongoing research on boundary-aware binary change detection using Mamba-based visual encoders for remote-sensing image pairs.
- Exploring encoder feature handling strategies to improve boundary preservation and change-region representation.
- Investigating scaled multi-dilation decoder designs for better multi-scale context aggregation and sharper change masks.
- Testing optimization and training strategies to improve model efficiency, stability, and overall change-detection performance.

ENGINEERING PROJECTS

Real-time Elephant Detection Using Infrasound Analysis and Machine Learning

- Developing an infrasound-based elephant detection approach using low-frequency acoustic signals around 5-35 Hz.
- Focus areas include signal acquisition, preprocessing, spectral feature extraction, noise robustness, machine-learning classification, and possible embedded/field deployment.

TECHNICAL SKILLS

- **Programming:** Python, C/C++, MATLAB, LaTeX, Git, Linux.
- **Machine Learning / Computer Vision:** PyTorch, OpenCV, Tensorflow.
- **Signal Processing / Embedded AI:** FFT/PSD analysis, filtering, infrasound analysis, Arduino/AVR, ESP32, Raspberry Pi, Jetson, sensor integration.

HONORS AND AWARDS

- P.D.S. Kularathne Memorial Prizes for the best student selected to the Faculty of Engineering in 2021.
- N.B.M. Mediweka Memorial Prizes for the best student selected to the Faculty of Engineering in 2021.
- S.J. Munasinghe Memorial Prize for the student who obtained the highest Z-score at the G.C.E. Advanced Level Examination in 2021.

LEADERSHIP AND EXTRACURRICULAR ACTIVITIES

Central Link Toastmasters Club **2023–2026**

- Member; developed technical communication, public speaking, and structured presentation skills through club participation.